UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/633,584	08/07/2000	Olivo G. Sivilotti	62801 CCD	3914

7590 09/04/2002

Christopher C Dunham
C/O Cooper & Dunham LLP
1185 Ave. of the Americas
New York, NY 10036

EXAMINER
KERNS, KEVIN P

ART UNIT	PAPER NUMBER
1725	11

DATE MAILED: 09/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/633,584	SIVILOTTI ET AL.	
	Examiner	Art Unit	
	Kevin P. Kerns	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-6, 8-23, and 25-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorburn et al. (US 4,193,440) in view of Kush (US 5,363,902).

Thorburn et al. disclose a belt-cooling and guiding means for the continuous belt casting of metal strip in a twin belt caster having flexible endless belts, with the apparatus containing an array of removable, hexagonal, and planar guiding and supporting (elongated) nozzle elements facing (adjacent to) and beveled from the reverse surface of the belt, which, in combination with liquid-withdrawal spaces (drainage areas, or gaps), form continuous slots of substantially uniform width between adjacent edges (abstract; column 1, lines 6-17 and 30-55; column 2, lines 1-25 and 44-61; column 3, lines 22-35; column 5, lines 28-46; column 6, lines 39-54; column 10, lines 1-44; and Figures 1-8). The coolant consists of a rapidly flowing layer (continuous uniform liquid film) of pressurized liquid with drainage openings covering less than 10% of the total belt surface, with the guiding face (surface) over which the coolant flows capable of moving a small amount angularly in any direction (column 2, lines 16-41; column 4, lines 13-19; column 8, lines 60-68; column 9, lines 1-8; and Figures 5-11). One of ordinary skill in the art would have recognized that the dimensions of the slots and bevels would be adjustable to conform to the spacing between a portion of the belt and each flat peripheral region of the nozzle faces, the depth and angles of concavity in the nozzle faces, and the water pressure (to obtain the fluid velocity), for the purpose of providing an optimum relationship between the belt, the water layer, and the nozzle faces. It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the above parameters taught by Thorburn et al., since it

has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Thorburn et al. do not specifically disclose a continuous slot in the support surface arranged transversely substantially completely across the casting belt, as well as a vacuum system associated with the drainage opening.

However, Kush discloses a contained quench system for controlled cooling of a twin belt continuous casting machine, in which the apparatus contains a vacuum system in communication with drain pipes, as well as a plurality of webs containing slots that serve as cooling means and supports that are transverse to the casting belt (abstract; column 1, lines 6-10; column 3, lines 65-68; column 4, lines 1-28; column 5, lines 30-68; column 6, lines 1-35; and Figures 1-6). These additional features are advantageous for relieving pressure and containing quenching fluid from longitudinally escaping along the belt surface (column 5, lines 30-68; and column 6, lines 1-35).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the belt-cooling and guiding means in the continuous caster of Thorburn et al., by adding the vacuum system in communication with the drain pipes, as well as a plurality of webs containing slots that serve as cooling means and supports that are transverse to the casting belt, as taught by Kush, in order to relieve pressure and to contain quenching fluid from longitudinally escaping along the belt surface (Kush; column 5, lines 30-68; and column 6, lines 1-35).

5. Claims 7 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorburn et al. (US 4,193,440) in view of Kush (US 5,363,902) as applied to claims 1 and 18 above, and further in view of Dumont-Fillon et al. (US 3,799,239).

Thorburn et al. (in view of Kush) disclose all the elements of claims 1 and 18 above. Neither Thorburn et al. nor Kush specifically discloses the use of a filter for filtering particles from the cooling liquid.

However, Dumont-Fillon et al. teach a method for continuous casting of metal in which a filter is used for providing fresh coolant and cleaning recirculated spent coolant prior to flow into the supply conduit, which is shown to be conventional in the art, for the purpose of filtering particles that would build up in narrow orifices of each nozzle, which would be detrimental to uniform cooling (column 2, lines 53-67; column 5, lines 57-67; and column 6, lines 1-2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the belt-cooling and guiding means in the continuous caster of Thorburn et al., with the transverse continuous slots and vacuum system taught by Kush, in order to relieve pressure and contain quenching fluid from longitudinally escaping along the belt surface, and further use the filtering means of Dumont-Fillon et al., in order to filter particles that would build up in narrow orifices of each nozzle, which would be detrimental to uniform cooling (Dumont-Fillon et al.; column 2, lines 53-67; column 5, lines 57-67; and column 6, lines 1-2).

Response to Arguments

6. The examiner acknowledges the applicants' amendment (paper #10) received by the USPTO on August 12, 2002. The prior 35 USC 112, 2nd paragraph rejections to claims 15, 32, and 45 have been overcome by the applicants' amendment. The Information Disclosure Statement (paper #9), including its attached international search report, was received by the USPTO on April 29, 2002. The examiner has considered the IDS and search report, and has enclosed an initialed copy of acknowledgement of the IDS (paper #9). Claims 1-45 remain under consideration in the application.

7. Applicant's arguments filed August 12, 2002, have been fully considered but they are not persuasive.

With regard to the applicants' comments and arguments on pages 2-7 of the amendment of August 12, 2002 (paper #10), the applicants have set forth that the 35 USC 103(a) rejection of Thorburn et al. in view of Kush does not suggest the applicants' invention. The examiner addresses the applicants' comments/arguments as follows:

On page 3, 2nd paragraph, the applicants have argued the rejection of dependent claims related to slot and bevel dimensions. The examiner respectfully disagrees that changes in the geometric provisions of Thorburn et al. (see paragraph 4 for further discussion), would not be obvious (as the applicants assert) in view of Thorburn et al. alone, regardless of the combination with Kush. Thorburn et al. lack the continuous slot arranged transversely in combination with a vacuum system, for which Kush discloses such claimed structures. On page 4, last paragraph, the applicants argue that Kush

teaches "quenching", not "temperature control". When a continuous fluid flow reaches a steady state, as it would in the Kush process (as well as the Thorburn et al. process, which includes a rapidly flowing, water cooling layer over essentially the entire rear surface of each belt – column 9, lines 62-68), uniform flow would be achieved. Contrary to the applicants' arguments on the middle paragraphs of pages 6 and 7, such disclosures by Thorburn et al. and Kush would not be considered as "teaching away" from the applicants' invention. Although the examiner appreciates the applicants' detailed comments regarding the operations of the Thorburn et al., Kush, and applicants' inventions, the claims (in particular the independent claims) continue to lack novel and/or unobvious structural features. The 35 USC 103(a) references, in addition to most of the prior cited references and IDS references, disclose or suggest at least some of the structural features common to twin belt casting apparatuses. The applicants' arguments against the functionalities of the 35 USC 103(a) rejection of Thorburn et al. in view of Kush is deficient in view of the structural limitations claimed in (all) independent claims 1, 18, and 35, as such structures in the cited art are indeed present, and such a combination of references achieves motivation (from Kush) to relieve pressure and to contain quenching fluid from longitudinally escaping along the casting belt surface (Kush; column 5, lines 30-68; and column 6, lines 1-35).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK
kpk
August 29, 2002

M. ALEXANDRA ELVE
PRIMARY EXAMINER